

Montana Fish, Wildlife & Parks Harvest Survey Program

Kevin Podruzny
Wildlife Biometrician
Research & Technical Services Bureau
Montana Fish, Wildlife & Parks



Harvest Survey Program

- ☐ Who are we?
- ☐ What information do we collect?
- ☐ What do we produce?
- ☐ How do we get the information?
- ☐ Why do we do it the way we do?
- ☐ How well do we do?
- ☐ Future enhancements.



Who are we?



Core Harvest Survey Team

- ❑ Kevin Podruzny (Biometrician, Research and Technical Services Bureau, Wildlife Division)
- ❑ Keri Wash (Harvest Survey Coordinator, Research and Technical Services Bureau, Wildlife Division)
- ❑ Merissa Hayes (Systems Analyst, Projects Bureau, Technology Services Division)
- ❑ Emily Hinz (Application Development Manager, Application Development Bureau, Technology Services Division)
- ❑ Garry Yadon and Quinlan Johnson (Software Engineers, Application Development Bureau, Technology Services Division)
- ❑ Robert Stanley and Mike Delzer (Database Administrators, DevOps Section, Technology Services Division)
- ❑ Craig Hageman and Sunny Schreiner (Network Support Specialists, Network Services Bureau, Technology Services Division)



MFWP Harvest Survey Working Group

- ❑ Diverse group of Helena Wildlife Division staff, Technology Services staff, and Regional Wildlife Biologists
- ❑ Meet at least annually to review and direct survey process
- ❑ Recommendations presented to Regional Wildlife Managers for approval or modification

- ❑ Wildlife Division - Kevin Podruzny , Justin Gude, John Vore, Quentin Kujala, Bob Inman, Nick Mulvaney
- ❑ Harvest Survey/Call Center - Keri Wash, Bob Day
- ❑ Mandatory Reporting - Jennifer Ard
- ❑ Technology Services - Merissa Hayes, Emily Hinz, Garry Yadon, Quinn Johnson
- ❑ Geographic Data Services – Smith Wells
- ❑ Responsive Management - Mike Lewis
- ❑ Wildlife Biologist, Region 1 - Bruce Sterling
- ❑ Wildlife Biologist, Region 2 - Liz Bradley
- ❑ Wildlife Biologist, Region 3 - Jenny Sika
- ❑ Wildlife Biologist, Region 4 - Cory Loecker
- ❑ Wildlife Biologist, Region 5 - Ashley Taylor
- ❑ Wildlife Biologist, Region 6 - Ryan Williamson
- ❑ Wildlife Biologist, Region 7 - Steve Atwood



What information do we collect?



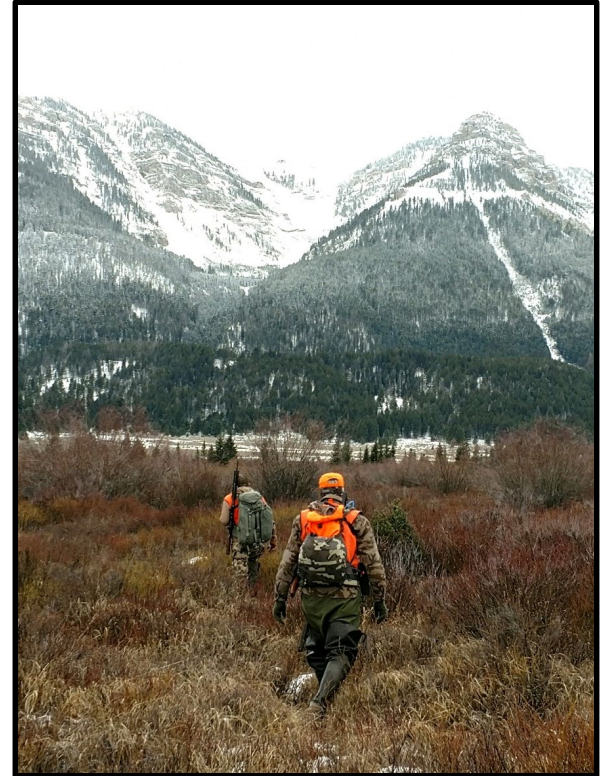
Hunter Harvest Information

- ☐ Residency
- ☐ Species
- ☐ License or Permit Type
- ☐ Sex/Age
- ☐ Method of Harvest
- ☐ Antler Points
- ☐ Location of Kill
 - ☐ Hunting District/Region (Most)
 - ☐ Specific Location (M/S/G)
 - ☐ Access/Property Type (Elk)
 - ☐ Township-Range-Section (FB)
- ☐ Time of Kill

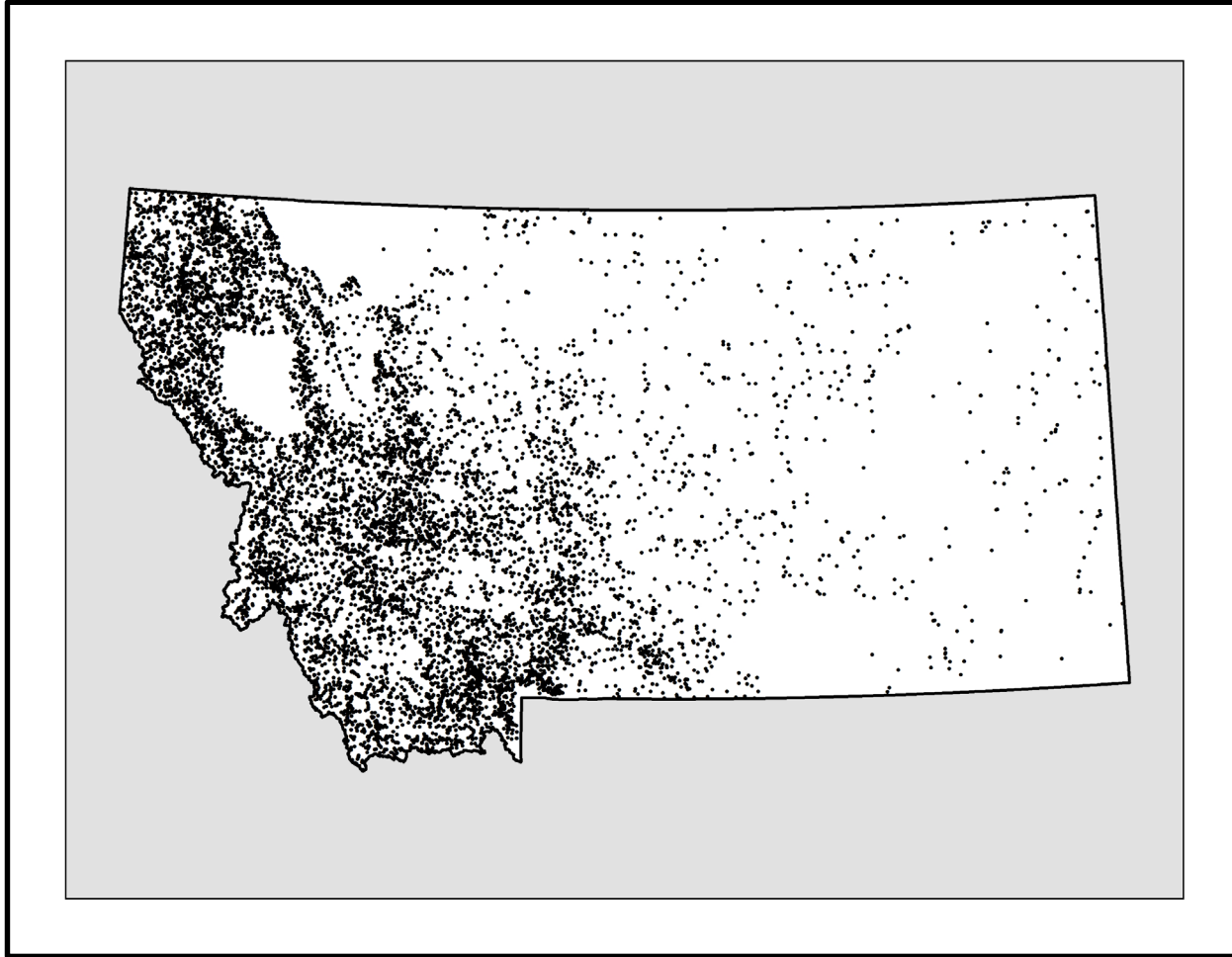


Hunter Effort Information

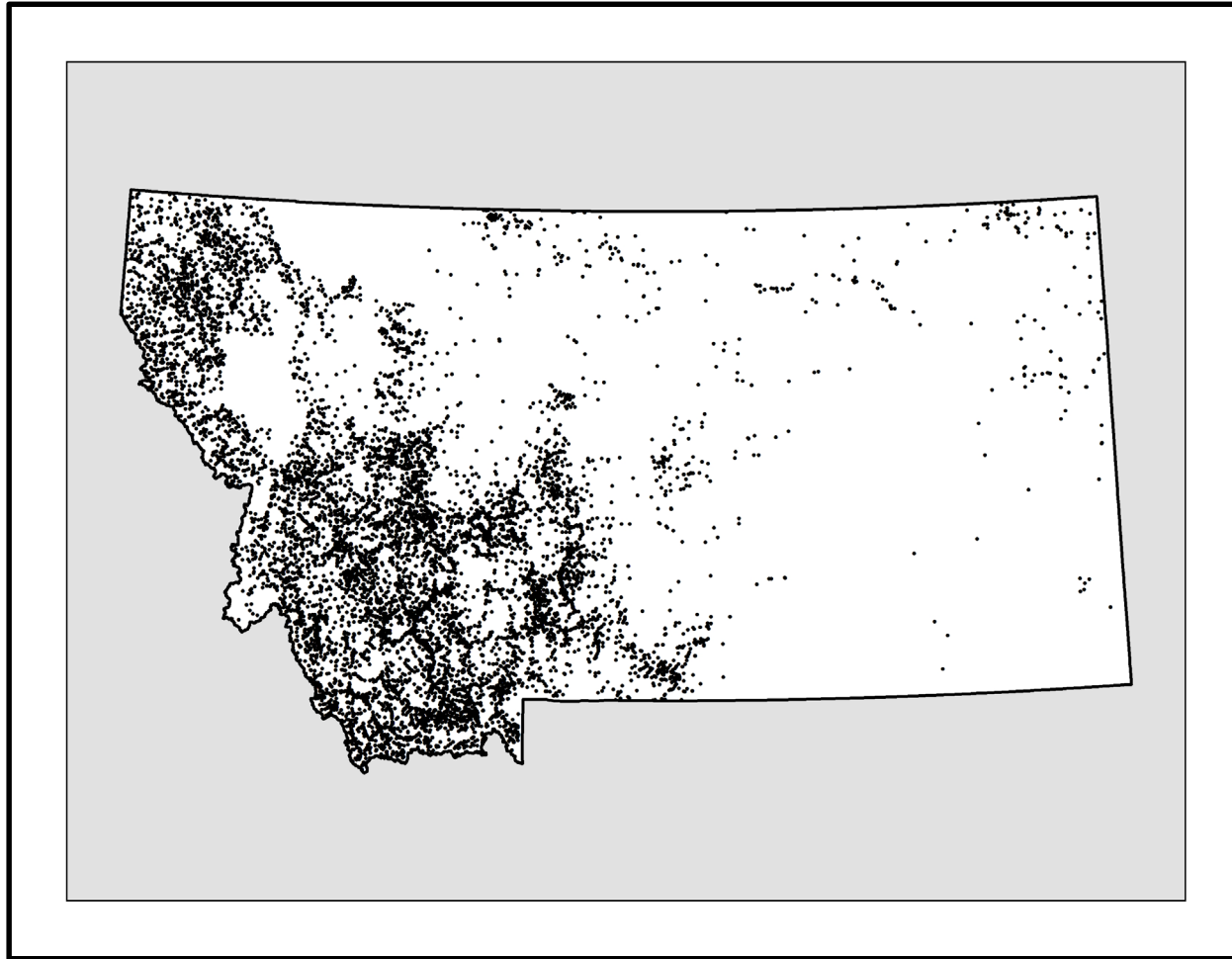
- ☐ Residency
- ☐ Species
- ☐ Location
 - ☐ Hunting District/Region
- ☐ Days (Most)
- ☐ Traps Set (FB)



Wolf Observations



Moose Observations



What do we produce?



Hunter and Harvest Estimates

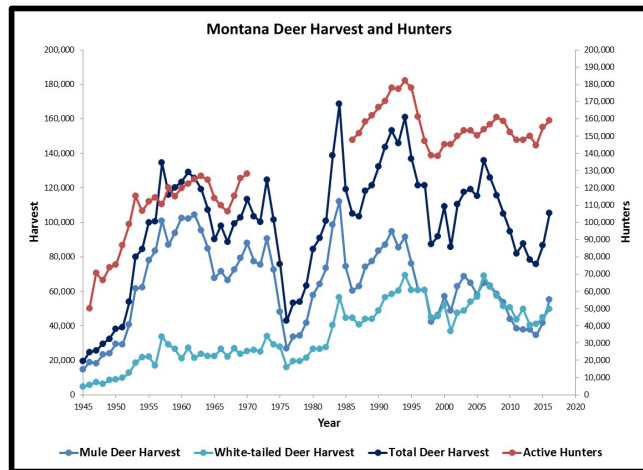
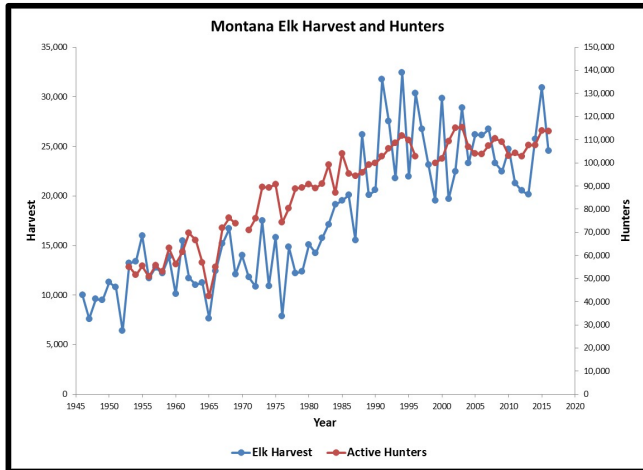
DEER					
2015 Deer Sample Summary					
Total Licenses Issued	Total Licenses Sampled	Total Hunters Sampled	Total Licenses Responding	Total Hunters Responding	Survey Response Rate
229,173	135,045	110,686	84,795	68,761	63%
2015 Deer Hunting and Harvest Survey Summary Estimates					
All Deer					
Hunters	Days Afield	Total Harvest*			
135,191	NA	86,382			
Mule Deer					
Hunters	Days Afield	Total Harvest*			
NA	NA	41,733			
White-tailed Deer					
Hunters	Days Afield				
NA	NA				
2015 Elk Sample Summary					
Total Licenses Issued	Total Licenses Sampled	Total Hunters Sampled	Total Licenses Responding	Total Hunters Responding	Survey Response Rate
181,620	106,117				
2015 Elk Hunting and Harvest Survey Summary Estimates					
Hunters	Days Afield				
113,959	1,049,003				
Harvest Public Land	Harvest Private B				
47.0%	10.6%				
* Includes harvest of animals for which age and sex were unknown					
PRONGHORN ANTELOPE					
2015 Pronghorn Antelope Sample Summary					
Total Licenses Issued	Total Licenses Sampled	Total Hunters Sampled	Total Licenses Responding	Total Hunters Responding	Survey Response Rate
26,013	17,224	15,761	11,087	10,126	64%
2015 Pronghorn Antelope Hunting and Harvest Survey Summary Estimates					
Hunters	Days Afield	Total Harvest*	Harvest Bucks	Harvest Does	Harvest Fawns
				2,995	120
TURKEY					
2015 Turkey Sample Summary					
Total Licenses Issued	Total Licenses Sampled	Total Hunters Sampled	Total Licenses Responding	Total Hunters Responding	Survey Response Rate
27,918	18,834	15,813	11,561	9,698	61%
2015 Turkey Hunting and Harvest Survey Summary Estimates					
Season	Hunters	Days Afield	Total Harvest*	Harvest Male	Harvest Female
Spring	5,160	19,806	2,532	2,532	0
Fall	4,736	19,497	2,453	1,422	884
Both (Combined)	8,836	37,381	4,985	3,954	884
UPLAND GAME BIRD					
2015 Upland Game Bird Sample Summary					
Total Licenses Issued	Total Licenses Sampled	Total Hunters Sampled	Total Licenses Responding	Total Hunters Responding	Survey Response Rate
115,422	30,833	30,833	18,741	18,741	61%
2015 Upland Game Bird Hunting and Harvest Survey Summary Estimates					
Species	Hunters	Days Afield	Total Harvest	Total Daily Bag Limits	
All Upland Game Birds	36,875	394,870	308,173	NA	
Pheasant	21,037	116,464	132,169	NA	
Gray (Hungarian) Partridge	7,455	53,264	38,328	NA	
Chukar Partridge	315	2,369	1,198	NA	
Sharp-Tailed Grouse	10,504	68,625	57,470	NA	
Sage Grouse	741	3,134	1,632	NA	
Ruffed Grouse	8,954	69,797	39,543	NA	
Dusky (Blue) Grouse	7,583	54,885	26,244	NA	
Spruce Grouse	2,760	20,526	8,085	NA	
Unknown	591	3,813	1,859	NA	
* Includes harvest of animals for which age and sex were unknown at the time of interview					



How is the information used?



Season Setting Recommendations



2018
UPLAND GAME BIRDS
FWP Montana

2018
DEER • ELK • ANTELOPE
Montana Fish, Wildlife & Parks

2018
MOOSE • SHEEP • GOAT
Montana Hunting Regulations

What's new? See page 13 for details and reminders

Apply for General

What's new? See page 13 for details and reminders

Apply for General Licenses, Special Licenses, and SuperTags Online: fwp.mt.gov



Elk Shoulder Season Assessment

Montana Shoulder Season Performance Criteria Evaluation

2016 Harvest Criteria - Harvest that is needed and harvest that was realized												
Hunting District(s)	Pop Obj	2016			Archery and General Seasons ^a				All Seasons Combined ^b (Archery+General+Shoulder)			
		Last Count	Recruitment		Adult Cows		Adult Bulls		Adult Cows		Cows + Bulls + Calves	
			Cows	Bulls	Needed	Realized	Needed	Realized	Needed	Realized	Needed	Realized
101	NA ^c	NA ^c			NA ^c	21	NA ^c	44	NA ^c	41	NA ^c	87
109/110	NA ^c	NA ^c			NA ^c	13	NA ^c	25	NA ^c	33	NA ^c	59
210/211	1450	2281	221	147	113	171	75	131	221	246	368	392
212	400		117	77	60	42	39	131	117	91	194	240
213	750	516	50	41	26	55	21	63	50	75	91	151
215	1400	2765	533	356	272	276	182	210	533	429	889	659
217	600	1225	96	64	49	92	33	42	96	240	160	301
290/298	600	767	95	63	48	121	32	54	95	148	158	215
291	600	976	58	39	30	81	20	61	58	174	97	240
292	NA ^c	NA ^c			NA ^c	53	NA ^c	64	NA ^c	64	NA ^c	130
312	600	1058	129	86	66	138	44	199	129	270	215	475
390	900	2321	315	210	161	88	107	78	315	189	525	273
393	1500	3027	415	277	212	206	141	192	415	306	692	510
411/511/530	800	5452	468	379	239	286	193	262	468	414	847	717
412	300	730	86	57	44	60	29	64	86	108	143	179
421/423	500	660	74	50	38	93	26	79	74	118	124	200
422	500	1685	186	124	95	62	63	55	186	143	310	203
445/455	2500	3976	457	305	233	205	156	141	457	257	762	414
446	950	2114	270	180	168	153	92	213	270	283	450	513
449/452	600	1501	192	128	98	98	65	133	192	132	320	284
451	275	538	89	59	45	22	30	32	89	62	148	100
502/510	60	180	28	19	14	16	10	10	28	22	47	32
520	1050	1191	281	187	143	72	95	108	281	121	468	235
540	600	1786	340	226	173	120	115	79	340	151	566	243
560	700	1661	274	183	140	117	93	113	274	157	457	290
570	100	576	88	59	45	29	30	47	88	47	147	97
575	225	992	147	99	75	79	50	45	147	89	246	137
580	975	4616	581	387	296	165	197	248	581	224	968	487
590	750	2331	383	255	195	159	130	233	383	235	638	484
620/621/622	1650	2869	457	305	233	281	156	264	457	310	762	598
630/631/632	350	535	85	56	43	58	29	57	85	98	141	164
680/690	250	435	90	60	46	71	31	44	90	85	150	138
Total	21935	48764	6605	4478	3400	3500	2285	3521	6605	5361	11083	9245

^aHarvest of adult bulls and cows (no calves) during the archery and general seasons combined must be a number $\geq 51\%$ of recruitment for both bulls and cows.

^bHarvest during all seasons combined (archery, general and shoulder seasons) must be a combined harvest of bulls, cows and calves $\geq 100\%$ of recruitment of all elk.

^cShoulder seasons in these hunting districts are not intended for population reduction but for redistributing elk. Harvest criteria do not apply.



Hunter Expenditure Estimates

Statewide estimates of deer, elk, and antelope hunter expenditures in Montana (2016).

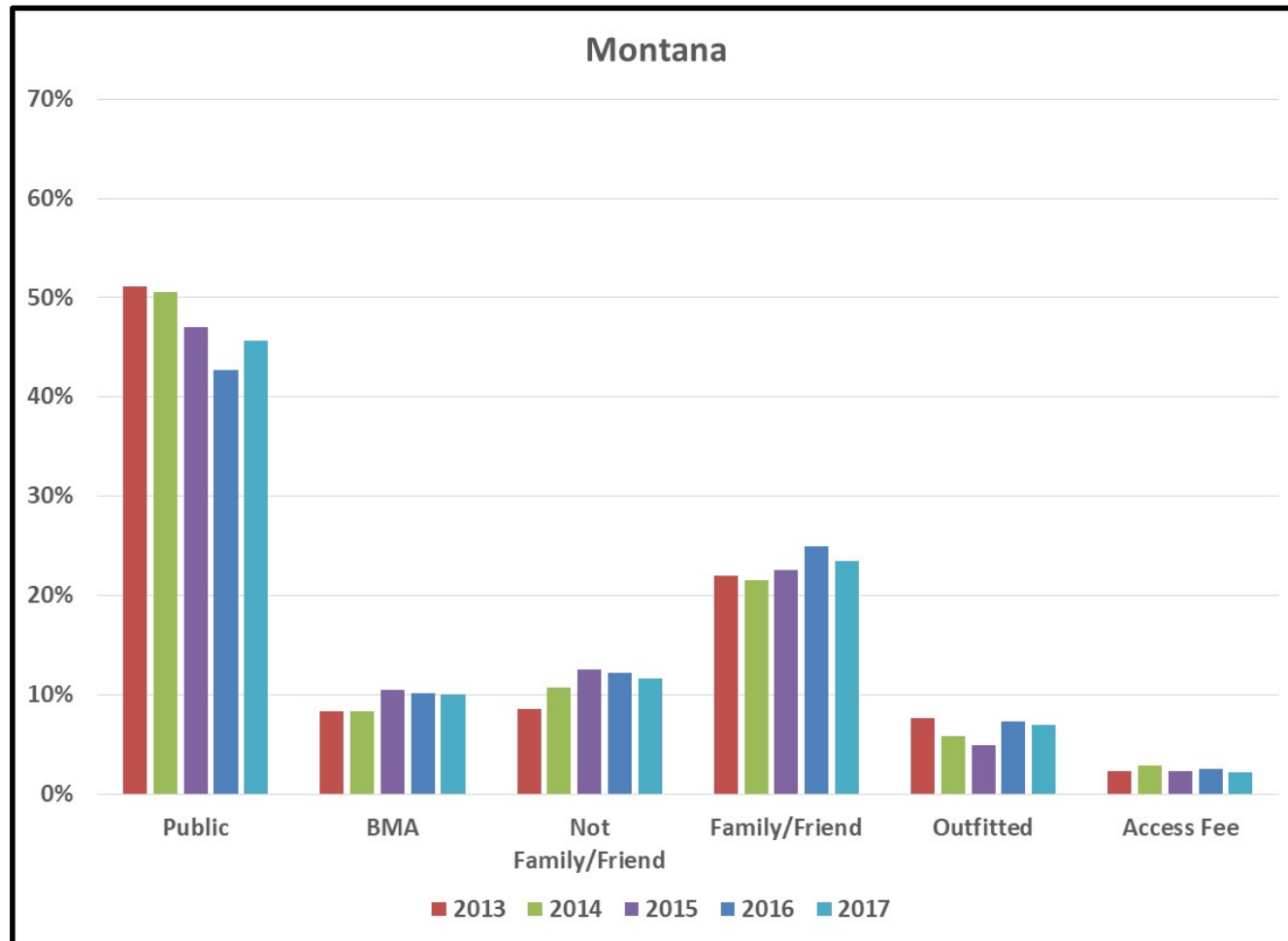
	Hunter Days ¹			Average Per Day Expenditures (2016 Adjusted Dollars)		Estimated Total Expenditures (in millions)		
	Residents	Nonresidents	Total	Residents	Nonresidents	Residents	Nonresidents	Total
Deer Hunters	972,808	164,760	1,137,568	\$72.48	\$483.55	\$70.5	\$79.7	\$150.2
Elk Hunters	902,136	146,867	1,049,003	\$87.00	\$582.07	\$78.5	\$85.5	\$164.0
Antelope Hunters	51,341	7,338	58,679	\$103.30	\$661.04	\$5.3	\$4.9	\$10.2

¹ Estimates of hunters days for deer hunting were provided from FWP's 2013 Hunter Harvest Survey. Estimates of hunter days for elk and antelope hunting were provided from FWP's 2015 Hunter Harvest Survey.

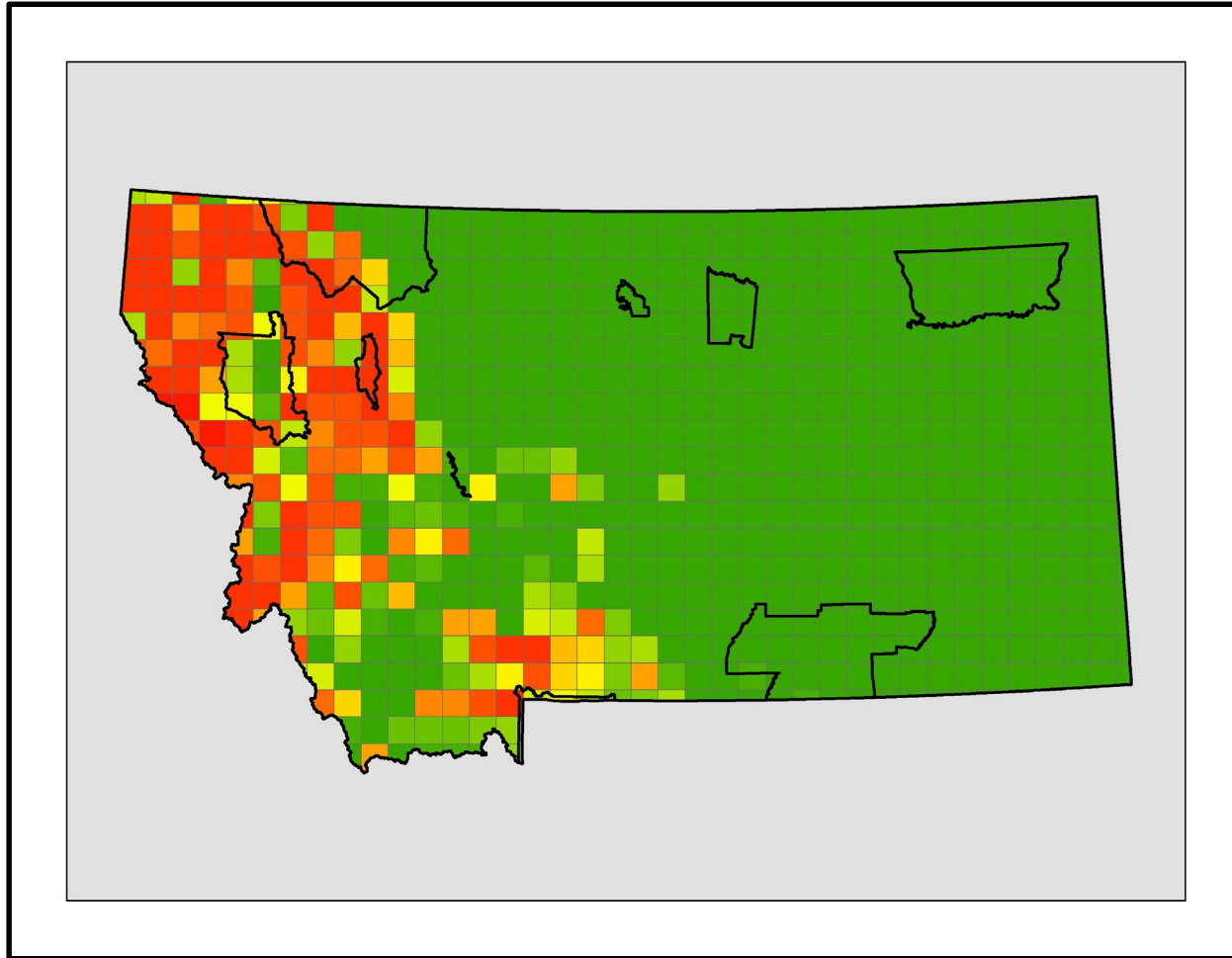
Total (in millions)... **\$324.3** The total is biased upwards to some unknown degree because it sums species-specific expenditures whereas a hunter could have hunted multiple species on any given day (e.g., a single day spent hunting elk and deer would count as both an elk hunter day and a deer hunter day in FWP's Hunter Harvest Survey).



Location of Kill – Access/Property Type





Wolf Occupancy Estimates



Hunt Planning

MONTANA
FISH, WILDLIFE & PARKS



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FWP Menu
Harvest Estimates Search




Harvest Estimates Search

Species:
- Select a Species -
Moose
Sheep
Mountain Goat
Deer
Elk
Antelope

Start Year:

End Year:

District:

[Related Websites](#) • [Site Index](#) • [Help](#) • [Employment](#) • [Contact FWP](#) • [Privacy Policy](#)

<https://myfwp.mt.gov/fwpPub/harvestReports>



How do we get the information?



Mandatory Reporting/Check



Mandatory Reporting/Check

- ☐ Quota regulated species
- ☐ Legislative or Commission requirement
- ☐ Species with limited number of licenses or permits and with limited harvest
- ☐ Typically records harvest only
- ☐ 24-hour call centers



Mandatory Reporting/Check

FWP Internal :: Mandatory Reporting (MRRE) - Windows Internet Explorer

https://apps.fwp.mt.gov/mrretemplate/main.jsp?cmd=HARVEST_RPT_SPECIES

File Edit View Favorites Tools Help

Favorites Suggested Sites Free Hotmail FWP Intranet FWP Help Web Slice Gallery

FWP Internal :: Mandatory Reporting (MRRE)

Mandatory Reporting (MRRE)

Go to: Mandatory Reporting (MRRE)

Logged in as: Justin Gude[Logout]

Internal Home

MRRE System

MRRE Home
Harvest Reporting
Quota Management
Harvest Inspection & Data Update
Data Query / Reporting
Data Maintenance
Documents

1 - Report Species 2 - Report Questionnaire 3 - Submit Report 4 - Report Confirmation

Reports (0)
Reports completed this Call (0)

New Harvest Report - Species

1 What species is being reported?

☐ Bobcat ☐ Mountain Lion ☐ Wolf
☐ Fisher ☐ Otter ☐ Wolverine
☐ Marten ☐ Swift Fox

Cancel Submit

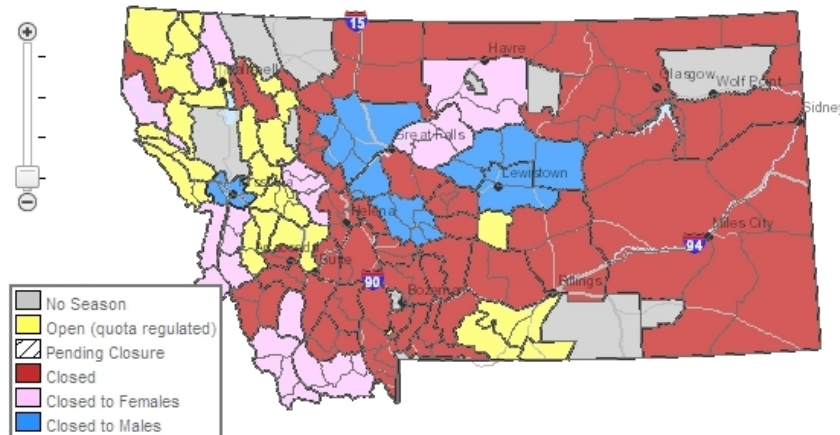
Local intranet 100%



Mandatory Reporting/Check

2011 Mountain Lion Hunting Status Report by District

To report the harvest of a lion, please call the Harvest Reporting line at 1-877-FWP-WILD (1-877-397-9453). Obtain current harvest info by calling 1-800-385-7826.



Status Updated: APRIL 10, 2012

Select a District

All Districts

** N/A - Sex class can be harvested: Does not have a sex specific quota

District: 100 - Winter Season

Management Unit	Quota	Harvest	Status
Female	10	9	OPEN



Telephone Survey



Telephone Survey

Random Survey Sampling

- ☐ Probability Sampling
 - ☐ Sample ~ 60% (up to 100% for limited licenses and permits)
 - ☐ Underlying theory dates to early 1900's
 - ☐ Makes population inference possible



Telephone Survey

Random Survey Sampling

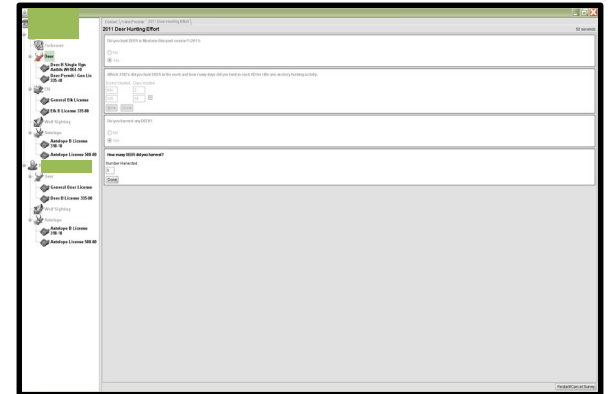
- ❑ Elk, Deer, Antelope, Upland Game Birds, Turkey

number issued	hunters	days
614,357	324,249	2,488,809

- ❑ Elk, Deer, Antelope only

number issued	hunters	days
455,885	286,315	2,181,179

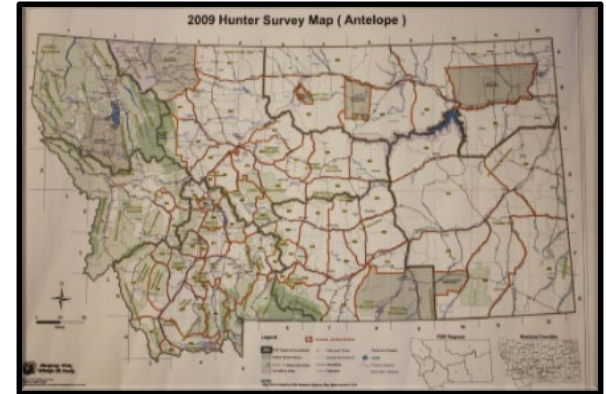
- ❑ Many opportunities



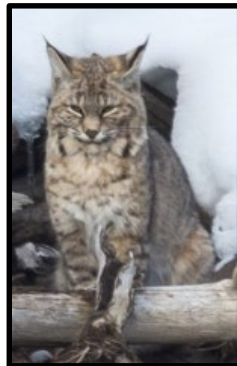
Telephone Survey

Harvest Survey Calling

- ☐ Call centers in Helena & Bozeman
- ☐ 50 callers
- ☐ Training and supervision
- ☐ Direct data entry computer application
- ☐ No mandatory check duplication

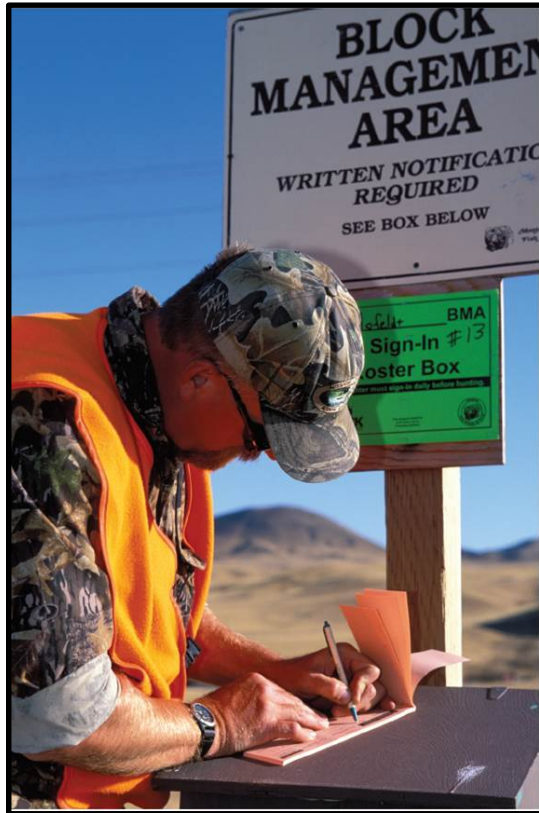


Mail Surveys



Mail Surveys

Hunter Access



Dear 2017 Montana Elk Hunter,

Via the Hunter Harvest Telephone Survey, you indicated that you harvested an elk in Hunting District 328 using your 2017 GENERAL ELK LICENSE this past hunting season in Montana.

FWP is surveying successful elk hunters from this past season (2017) to learn more about where elk are specifically being harvested across the state.

Please take a minute to complete the attached survey. Return your completed survey by mail when you are done (no postage is necessary). Of course, this survey is voluntary and your responses to the survey questions will remain confidential.

If you have questions about this survey, please contact Keri Wash by phone (406) 994-5374 or by email kwash@mt.gov.

Thank you for your help!

Ken McDonald
Wildlife Division Administrator



MONTANA FISH, WILDLIFE & PARKS

(Please detach and drop your completed survey in the mail when you are done)

This survey focuses specifically on the elk you reported you harvested in Hunting District 328 using your 2017 GENERAL ELK LICENSE this past hunting season in Montana.

On what type of property did you harvest this elk? (**check only one**)

- ☐ Publicly owned land (e.g., FWP, DNRC/state, Forest Service, Bureau of Land Management, Fish & Wildlife Service lands, etc.). *Of note, Block Management is NOT publicly owned land.*
- ☐ Private land enrolled in Block Management. *Of note, Nature Conservancy, Weyerhaeuser (formerly Plum Creek Timber), and other corporate timber company lands in the western part of the state are enrolled in Block Management.*
- ☐ Non-Block Management private land (without a fee) that is owned by your family, relatives, a close friend, or friends of your family/relatives
- ☐ Non-Block Management private land (without a fee) that is **NOT owned** by your family, relatives, a close friend, or friends of your family/relatives
- ☐ Private land (guided by a hunting outfitter)
- ☐ Private land with access fee charged (e.g., hunting lease, fees charged per hunter or group of hunters, hunting club, etc.)

Thank you for your help!

3505



Mail Surveys

Furbearer Survey



2. Please report your **TRAPPING AND SNARING** activities by trapping district in the appropriate boxes below (badger, beaver, bobcat, coyote, fisher, mink, muskrat, otter, pine marten, raccoon, red fox, swift fox, striped skunk, spotted skunk, short-tailed weasel, long-tailed weasel or least weasel,) even if you did not harvest any animals.

Please refer to the descriptions of trapping districts 1-7 enclosed.

TRAPPING DISTRICT	Species	Number of Traps/ Snares Set	Number of Days Set	Number Harvested (Kept)

3. Please report your furbearer and predator **HUNTING** activity **WITHOUT HOUNDS** (badger, bobcat, coyote, raccoon, red fox, striped skunk, spotted skunk).

DISTRICT	Species Hunted	Days Hunted	Number Harvested

4. Please report your furbearer **HUNTING** activity **WITH HOUNDS** (bobcat, raccoon).

DISTRICT	Species Hunted	Days Hunted	Number Harvested

Please return this survey in the enclosed postage paid envelope within 3 weeks. Thank you for your participation.

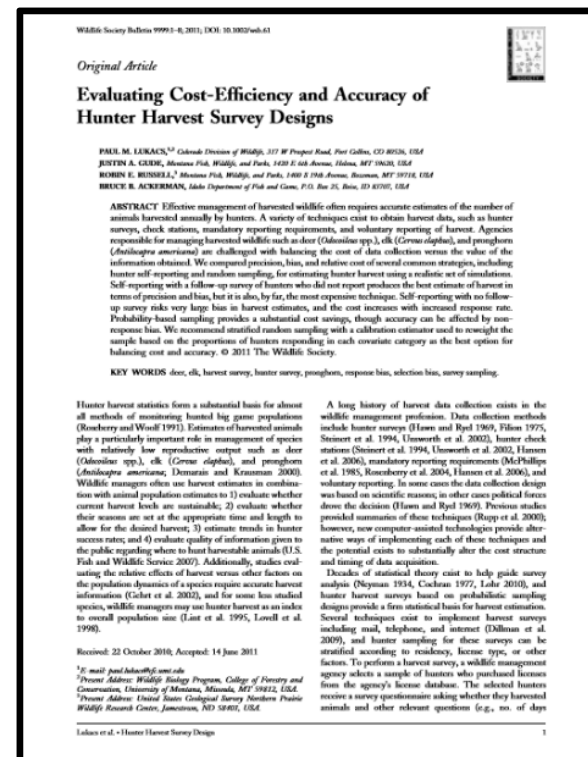


Why do we do it the way we do?



History

- ❑ Making reliable (accurate and precise) estimates of game harvest in a timely manner is a long standing and fundamental activity of MFWP
- ❑ Began in 1941
- ❑ Many approaches have been attempted and evaluated through the years.
 - ❑ Mandatory check implemented:
 - ❑ Lions: 1971, Sheep: 1974, Goats: 1982, Bears: 1985
 - ❑ Elk: evaluated for permits in 1989 (70% compliance)
 - ❑ Program reviews:
 - ❑ 1971, 1983, 1986
 - ❑ Wildlife Management Institute 2006



Cost

Financial Costs

State	Elk, Deer, Antelope Hunters	Elk, Deer, Antelope Issued Licenses	Data Collection Costs
Montana	286,315	455,885	~ \$210,000
Idaho	232,381	254,785	~ \$400,000



Cost

Regulatory Costs

State	License Holders	Compliance Rate
Idaho	~ 230,000	62%
Washington	~280,000	70%
New Mexico	~50,000	83%
Utah	~6,000	80%



Timeliness

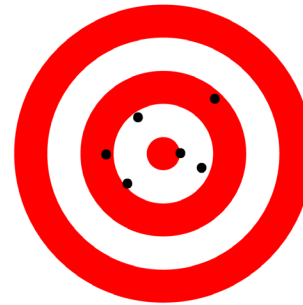
Survey	Date Required
Moose, Sheep, Goat	March
Elk	April*
Deer	April
Pronghorn	April
Upland Game Birds	April
Turkey	April



Accuracy



A High Precision, High Accuracy



C Low Precision, High Accuracy



B High Precision, Low Accuracy

A
Mandatory Reporting with
Non-response Follow-up

B
Mandatory Reporting without
Non-response Follow-up

C
Survey Sampling



Accuracy

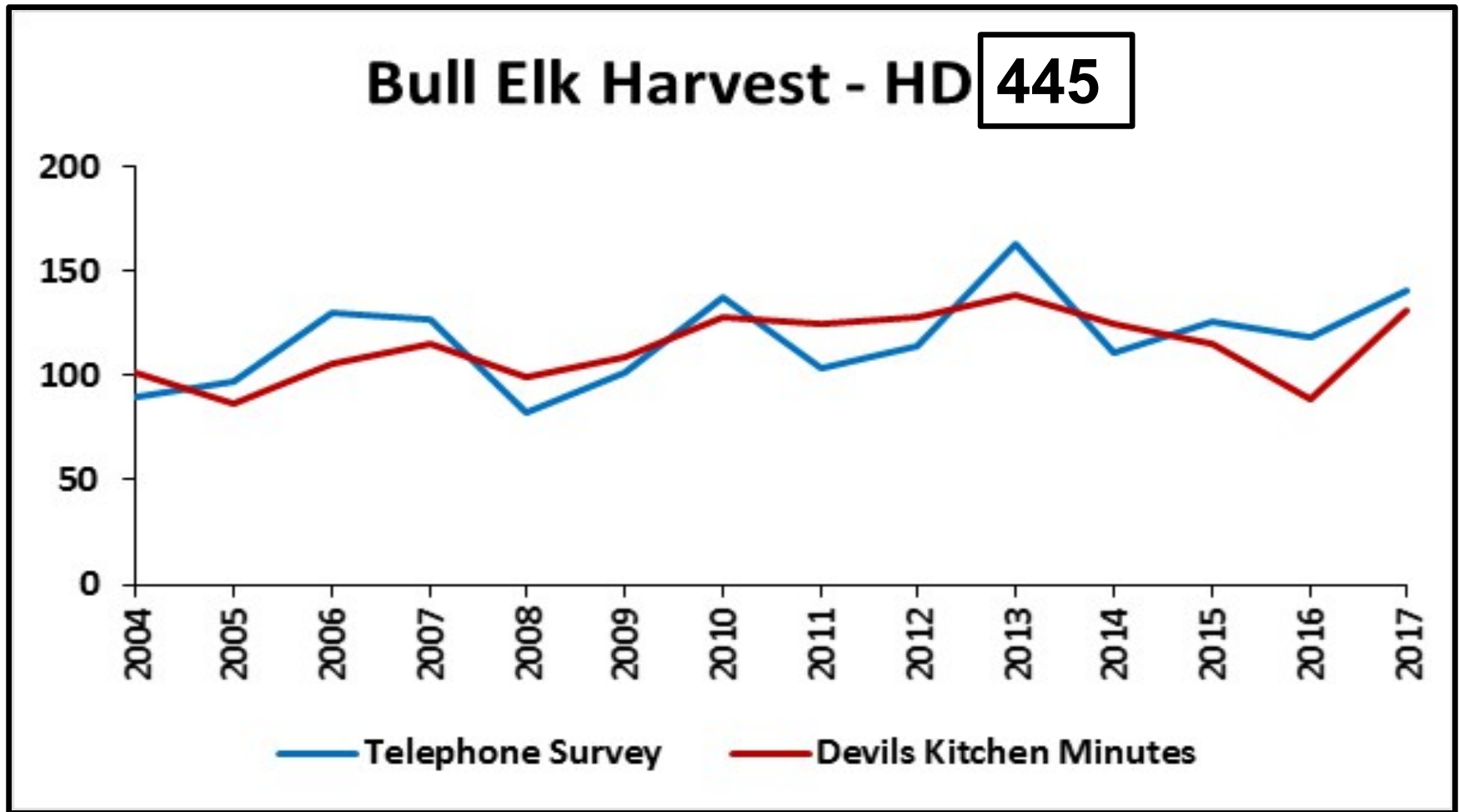
2017 Elk Harvest Estimates		
State	30,348	0.9%
Region 1	931	5.1%
Region 2	5,012	2.2%
Region 3	13,904	1.4%
Region 4	5,686	2.1%
Region 5	2,962	2.9%
Region 6	659	4.9%
Region 7	1,171	4.3%
Hunting Districts	183 (0 - 938)	19.8% (5.4% - 82.8%)



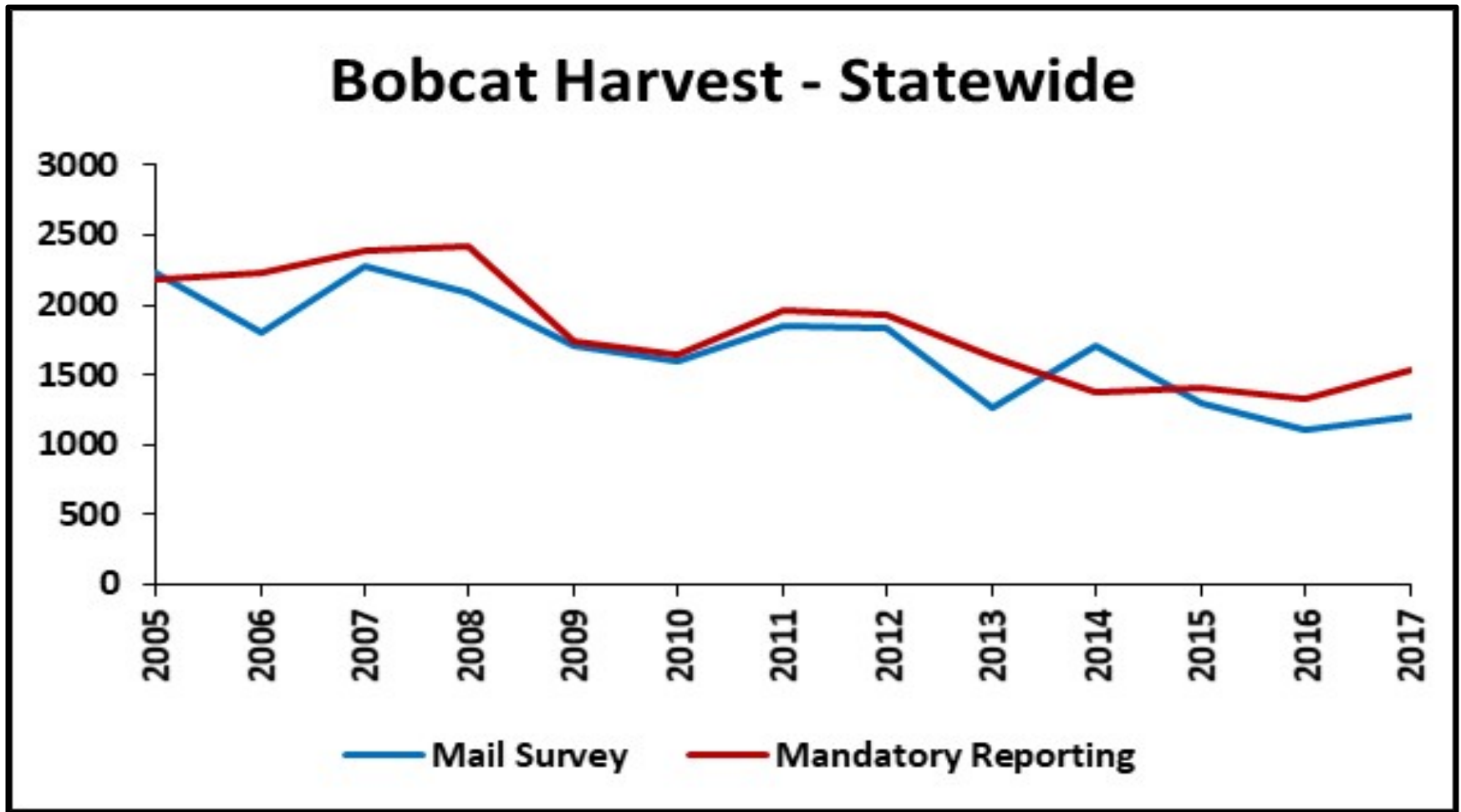
How well do we do?



HD 445 – Bull Elk Harvest



Bobcat Harvest




Future Enhancements



Harvest Data Self-entry

MONTANA
FISH, WILDLIFE & PARKS



SEARCH

HELP

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DEVELOPMENT SERVER

Logged in as: merissa hayes [Logout]

Your 2016 Harvest Surveys

Select Hunter:

Select Surveys:

Search

Reset

Search

Reset


Take GENERAL ELK LICENSE Survey

1.) Did you harvest an ELK with your GENERAL ELK LICENSE?

Yes

2.) In which HD did you harvest this ELK?

Hunting District



← Prev

Next →

Restart Survey

Cancel Survey

Close

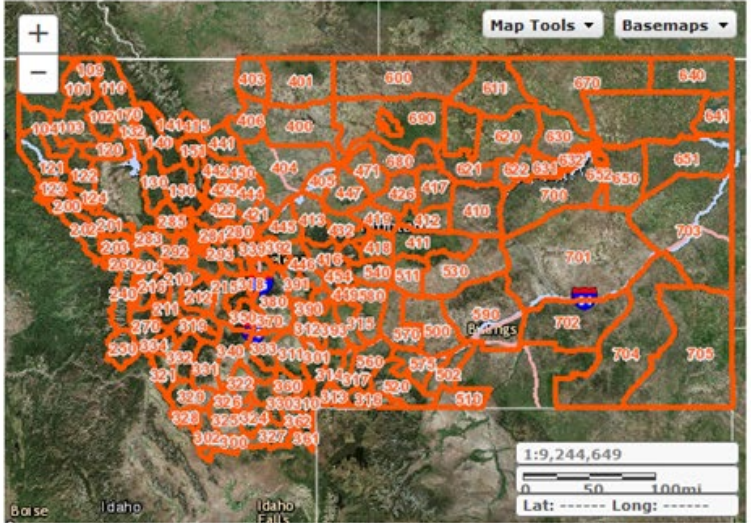
FWP Hunting District Map

+

-

Map Tools

Basemaps



Base

Idaho

Idaho Falls

1:9,244,649

0 50 100mi

Lat: --- Long: ---

Close

Related Websites

Site Index

Help

Employment

Contact FWP



Summary



MFWP Harvest Survey Program

- ☐ Long history
- ☐ Cross-divisional program
- ☐ Continual refinement
- ☐ Hybrid system
 - ☐ Mandatory checking
 - ☐ Smaller, focused hunts
 - ☐ Survey sampling
 - ☐ Larger, less focused hunts
- ☐ Requires hunter participation
- ☐ Goals: reliability and timeliness while balancing costs

